CLAIMS

1. A thermally and acoustically insulated vessel, said vessel comprising:

a body of polymeric material which defines at least a portion of said vessel; and

a body of a refractory fabric which is partially embedded in, and retained by, said polymeric material so that a portion of said body of refractory fabric is exposed upon a surface of said body of polymeric material; whereby said exposed portion of said refractory fabric provides thermal and acoustic insulation for said vessel.

2. The vessel of claim 1, wherein said fabric is a non-woven fabric.

3. The vessel of claim 1, wherein said fabric is comprised of carbonized filaments of a polymeric material.

4. The vessel of claim 3, wherein said polymeric material comprises polyacrylonitrile.

5. The vessel of claim 1, wherein said body of refractory fabric has a thickness in the range of 1-50 millimeters.

6. The vessel of claim 1, wherein said body of polymeric material is configured to retain a fluid.

7. The vessel of claim 6, wherein said body of polymeric material defines a duct configured to direct a stream of gaseous fluid therethrough.

8. The vessel of claim 7, wherein said fabric is disposed upon an interior surface of said duct so as to be in contact with said stream of a gaseous fluid.

9. The vessel of claim 6, wherein said body of polymeric material is configured to retain a liquid.

10. The vessel of claim 9, wherein said body of polymeric material defines a tank.

11. The vessel of claim 9, wherein said vessel is configured to retain a fluid in contact with an interior surface thereof, and wherein said body of a refractory fabric is disposed upon an exterior surface of said vessel.

12. The vessel of claim 1, wherein said body of polymeric material defines a conduit which is configured to retain a communication line therein, and wherein said body of refractory fabric is disposed on an exterior surface of said conduit.

13. The vessel of claim 1, further including a layer of metallic material disposed atop a surface of the exposed body of refractory fabric.

14. The vessel of claim 13, wherein said layer of metallic material comprises a metal foil.

15. The vessel of claim 13, wherein said layer of metallic material is a woven material.

16. The vessel of claim 15, wherein said woven material is an aluminum-based material.

17. The vessel of claim 16, wherein said aluminum-based material is co-woven aluminum and glass fiber material.

18. A method of making a thermally and acoustically insulated vessel, said method comprising the steps of:

providing a mold having a forming surface which defines at least one surface of said vessel;

disposing a body of a refractory fabric in said mold so that said refractory fabric is in contact with at least a portion of said forming surface;

introducing a hardenable liquid polymeric material into said mold so that said forming surface shapes said liquid polymeric material into a shape corresponding to said vessel and said liquid polymeric material contacts and infiltrates a portion of said refractory fabric; and

hardening said polymeric material so as to define a vessel having said refractory fabric bonded to a surface thereof.

19. The method of claim 18, wherein said hardenable liquid polymeric material comprises a molten thermoplastic material.

20. The method of claim 18, wherein said hardenable liquid polymeric material comprises a thermosetting polymer.

21. The method of claim 18, wherein the step of providing a mold comprises the step of providing a mold selected from the group consisting of: injection molds, extrusion molds, blow molds, slush molds, and combinations thereof.

22. A composite insulation material comprising:

a layer of a refractory fabric; and

a layer of a metallic material disposed in a superposed relationship with a first surface of said layer of refractory fabric.

23. The material of claim 22, wherein said fabric is comprised of carbonized filaments of a polymeric material.

24. The material of claim 23, wherein said polymeric material comprises polyacrylonitrile.

25. The material of claim 22, wherein said layer of metallic material comprises a metal foil.

26. The material of claim 25, wherein said metal foil is a steel foil or an aluminum foil.

27. The material of claim 22, wherein such layer of metallic material is a woven material.

28. The material of claim 27, wherein said woven material is an aluminum-based material.

29. The material of claim 28, wherein said aluminum-based material is a co-woven aluminum and glass fiber material.

30. The material of claim 22, wherein a layer of a reinforcement material is interposed between said layer of refractory fabric and said layer of metallic material.

31. The material of claim 30, wherein said layer of metallic material is a layer of aluminum foil, said layer of reinforcement material is a layer of glass fiber material, and wherein said foil and said layer of glass fiber material are adhesively bonded to the first surface of said layer of refractory fabric.